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Crows Over the Crum

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Professor and students exploit the common crow's uncommon powers of vocalization in joint research projects, partially supported by Sloan funds, on social behavior and communication

by Nicholas S. Thompson
Assistant Professor of Psychology

FOR THREE YEARS, my family, my students and I have been studying the social behavior and communication of the common crow. During this time, we have recorded their calls, watched them through binoculars from the Clothier tower, stalked them through the Crum Woods, raised fledglings brought to us by the residents of College Hill, and attempted (unsuccessfully) to trap and mark adult birds on the soccer field. These activities have brought me into contact with many people who want to know what a psychologist is doing chasing birds around the woods. After all, isn't man the proper study of mankind?

The answer lies in the crows' extraordinary powers of vocalization. Crows in the wild make sounds which range all the way from mellow coos and whistles to harsh rattles and scraping sounds. In the variety of their vocalizations, crows are much more like man than the traditional laboratory subjects — the rat, the pigeon, and the monkey, who are, on

In the field, Professor Thompson has set up owl decoy to lure crows to microphone. Student research assistant Tuggelin Yourgrau '70 helps him make recordings.

The Thompsons raised three orphan crows last summer in order to test their abilities to solve simple problems by counting. Thompson thinks crows may use a simple form of counting in their communications.

the whole, rather poor vocalizers. We are studying crows because we think their remarkable vocal behavior may shed light on some of the properties of human language.

Crows are also tremendously valuable in educating students in the scientific study of behavior. A big problem in science education is to bridge the gap between the urgent but naive curiosity of the freshman and the difficult and sophisticated methods which his professors offer him as a means to appease his curiosity. Crows are very helpful in solving this problem. Once a student starts to wonder about the meaning of all that cawing, he is goaded mercilessly by the crows. He hears them when he wakes up in the morning and sees them plodding on the fields as he comes to classes. He hears their nesting calls through the open windows of the Martin library in the spring and sees the chaotic mobs which gather to torment owls on grey winter afternoons.

Yet for all its banality, the cawing of crows is a mystery. Why are the calls higher sometimes, lower other times? Why do they sometimes come in crisp threes, sometimes in disorganized languid chains? "How would I find out what these calls mean?" the student wonders. "What does it *mean* to say something means something?" and so on. Gradually, the questions are refined. The student seeks methods by which to answer his questions. The calls must be recorded and measured in some way. Some way must be found of relating the calls to the circumstances of the caller. Eventually, the student can go to work on a project of his own or work as an apprentice on a project already in progress.

Science knows so little about the cawing of crows that any small addition of knowledge that a student makes is likely to be important. One group spent several weeks counting "caws" in the woods and helped to demonstrate that crows have a primitive number system which they use in their cawing. Several students

have learned the delicate art of stalking a cawing crow with a directional microphone and a portable tape recorder. Crows are skittery animals and they don't like being followed by people who point things at them. Still, several dozen very clear records have been made, transcribed to visual records by special equipment maintained at Rockefeller University, and are now being mathematically analyzed at the Swarthmore Computer Center.

The results of our investigations so far suggest that cawing in the common crow is a system of temporary individual identification which permits each crow a rough count and localization of the other crows within hearing. Such a system would be of immense value for a bird like a crow which forages in loose flocks. Each flock member could locate himself with respect to the rest of the flock by noting the number of different types of calls he hears around him. A bird at the center of the flock would tend to hear different calls from many directions; a bird at the fringes of the flock would tend to hear different calls from one direction.

Perhaps more important, these results illustrate the educational and scientific benefits which can accrue when professor and student cooperate to exploit the unique opportunities provided by the Swarthmore environment.

Professor Thompson and research assistant Carol Talmadge '68 coordinate recordings and visual tracings of cawings to make precise measurements of the duration of each caw.

In these sonograms, or voice prints, of the cawing of three crows, pitch is represented on the vertical axis, time on the horizontal axis. As the sonograms clearly indicate, each of the three crows has its own idiosyncratic pattern of cawing.